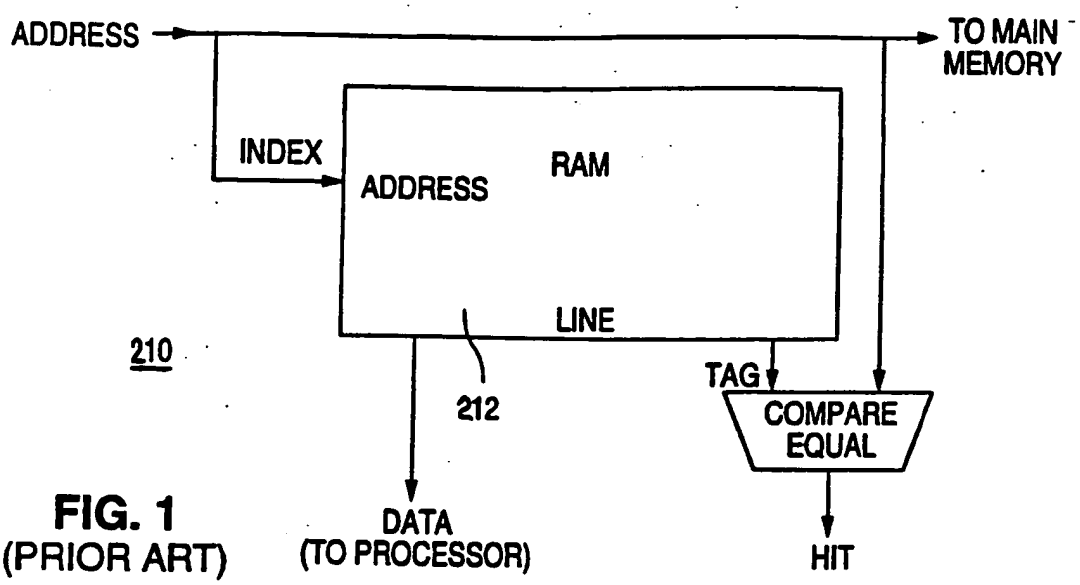



**FIG. 1**
(PRIOR ART)

**Figure 2**

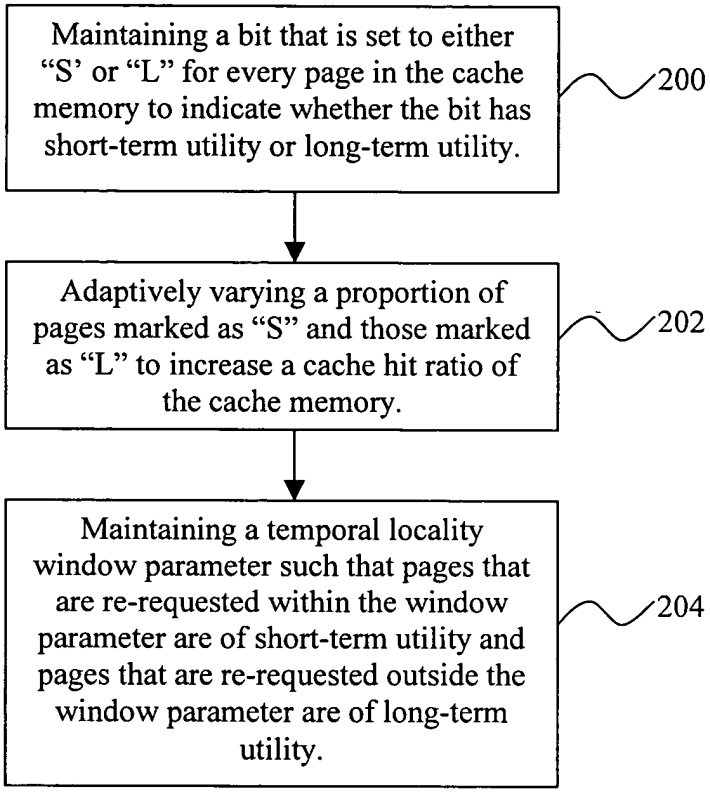
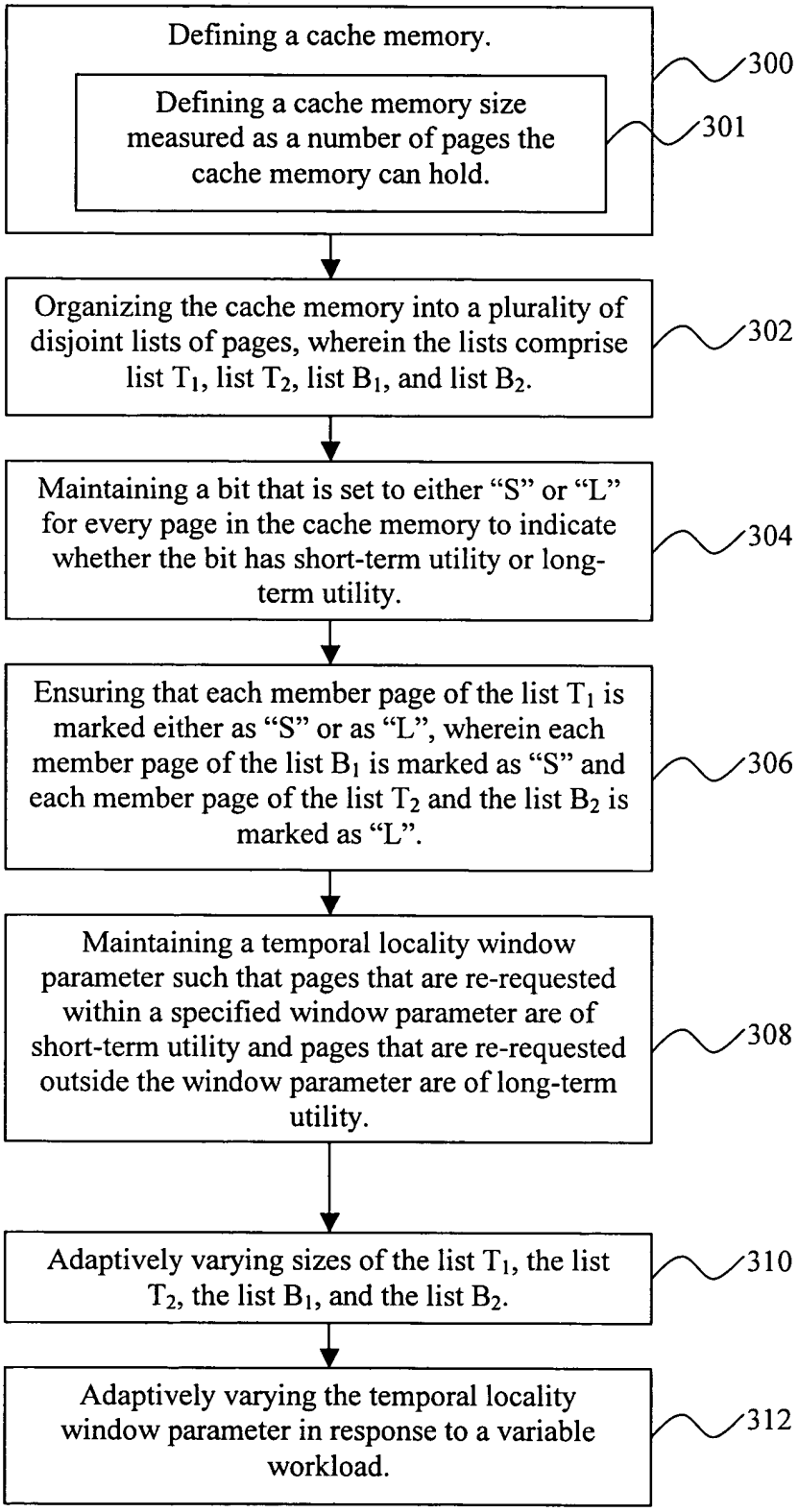

Maintaining a bit that is set to either "S' or "L" for every page in the cache memory to indicate whether the bit has short-term utility or long-term utility.
200
Adaptively varying a proportion of pages marked as "S" and those marked as "L" to increase a cache hit ratio of the cache memory.
202
Maintaining a temporal locality window parameter such that pages that are re-requested within the window parameter are of short-term utility and pages that are re-requested outside the window parameter are of long-term utility.
204

**Figure 3**


Defining a cache memory.
Defining a cache memory size measured as a number of pages the cache memory can hold.
300
301
Organizing the cache memory into a plurality of disjoint lists of pages, wherein the lists comprise list $T_1$, list $T_2$, list $B_1$, and list $B_2$.
302
Maintaining a bit that is set to either "S" or "L" for every page in the cache memory to indicate whether the bit has short-term utility or long-term utility.
304
Ensuring that each member page of the list $T_1$ is marked either as "S" or as "L", wherein each member page of the list $B_1$ is marked as "S" and each member page of the list $T_2$ and the list $B_2$ is marked as "L".
306
Maintaining a temporal locality window parameter such that pages that are re-requested within a specified window parameter are of short-term utility and pages that are re-requested outside the window parameter are of long-term utility.
308
Adaptively varying sizes of the list $T_1$, the list $T_2$, the list $B_1$, and the list $B_2$.
310
Adaptively varying the temporal locality window parameter in response to a variable workload.
312

# Figure 4

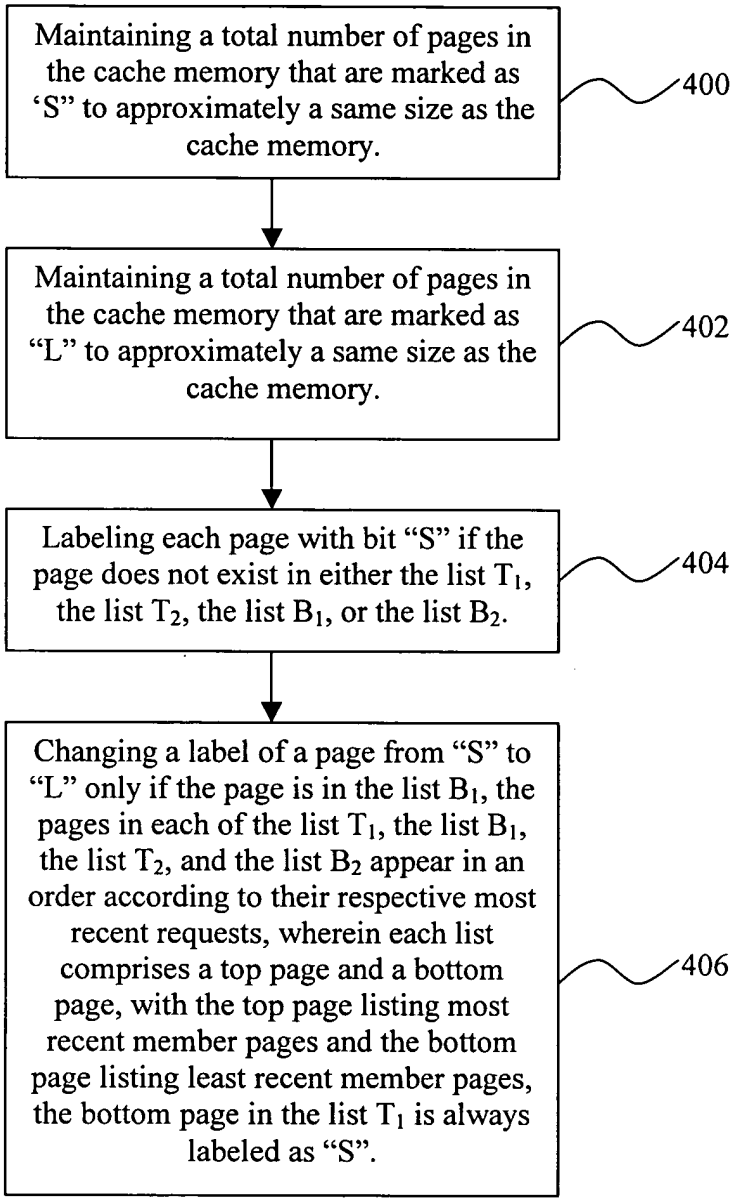
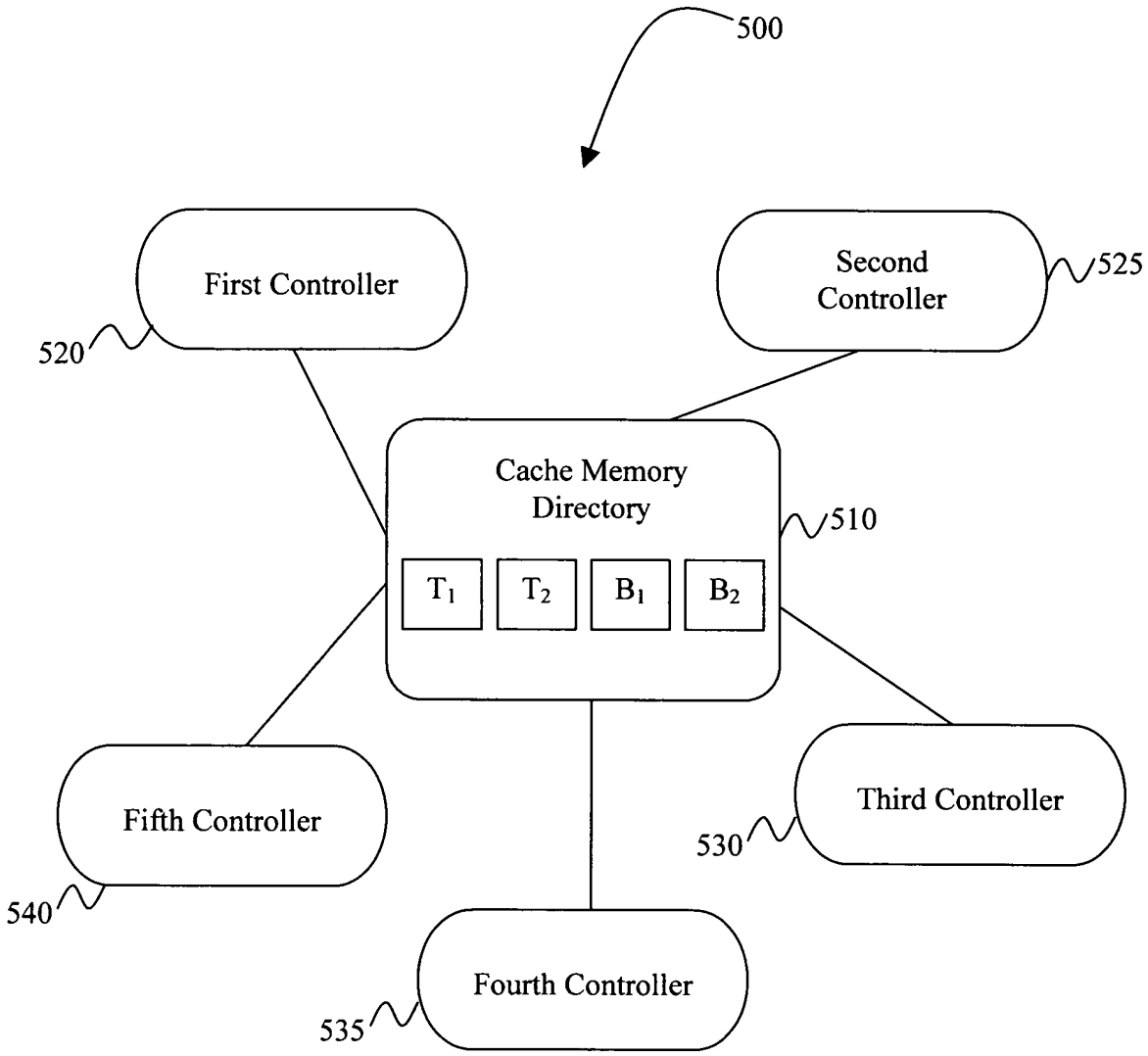

Maintaining a total number of pages in the cache memory that are marked as 'S" to approximately a same size as the cache memory.
400
Maintaining a total number of pages in the cache memory that are marked as "L" to approximately a same size as the cache memory.
402
Labeling each page with bit "S" if the page does not exist in either the list $T_1$, the list $T_2$, the list $B_1$, or the list $B_2$.
404
Changing a label of a page from "S" to "L" only if the page is in the list $B_1$, the pages in each of the list $T_1$, the list $B_1$, the list $T_2$, and the list $B_2$ appear in an order according to their respective most recent requests, wherein each list comprises a top page and a bottom page, with the top page listing most recent member pages and the bottom page listing least recent member pages, the bottom page in the list $T_1$ is always labeled as "S".
406

**Figure 5**


500
First Controller
520
Second Controller
525
Cache Memory Directory
510
$T_1$
$T_2$
$B_1$
$B_2$
Fifth Controller
540
Third Controller
530
Fourth Controller
535

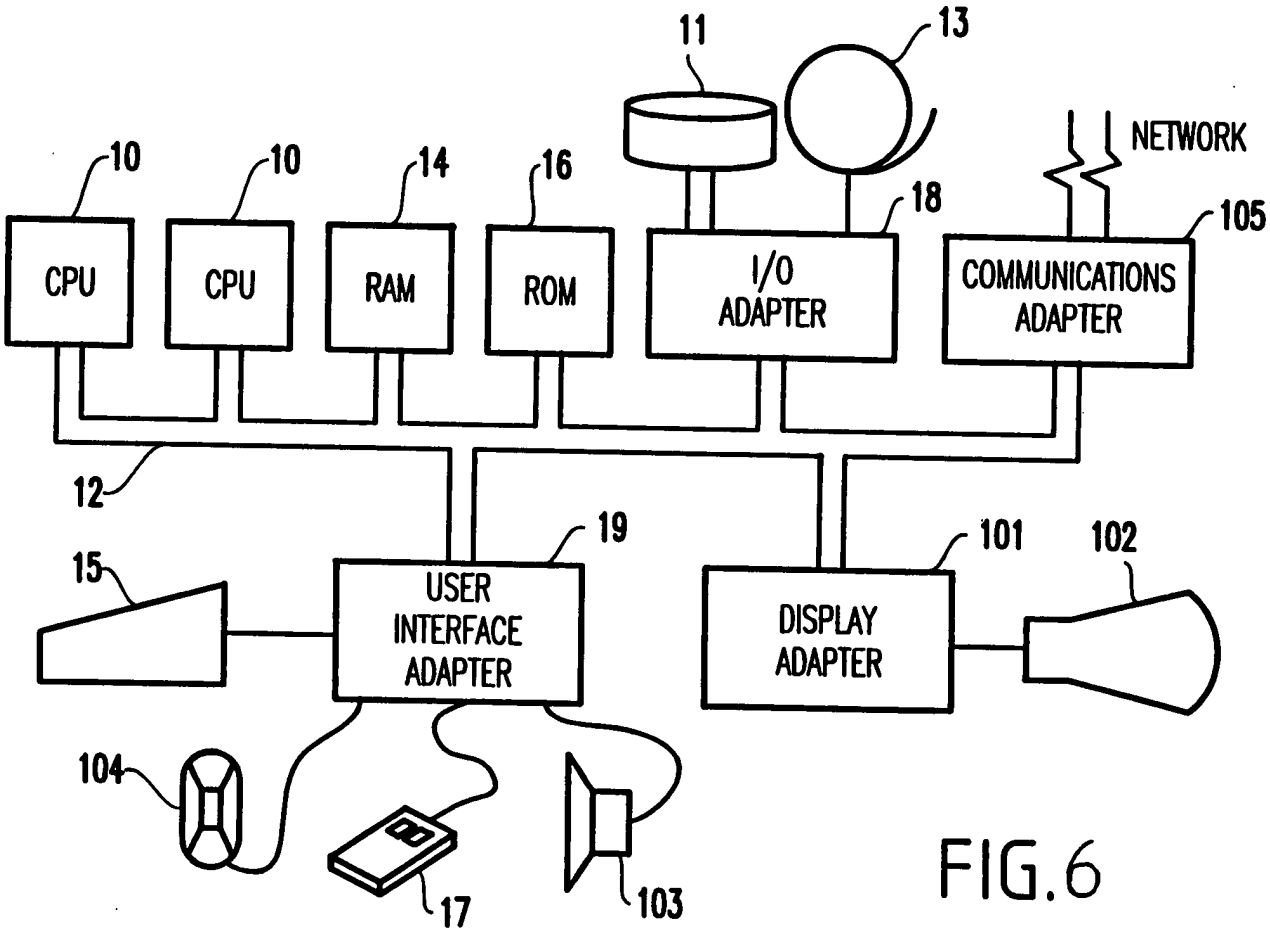

11
13
NETWORK
10
10
14
16
18
105
CPU
CPU
RAM
ROM
I/O ADAPTER
COMMUNICATIONS ADAPTER
12
19
101
102
15
USER INTERFACE ADAPTER
DISPLAY ADAPTER
104
17
103

FIG.6